

DUNLEARY HARBOUR.

ACCOUNT, ESTIMATE, AND PAPERS

RELATING TO

The Royal Harbour of George the Fourth, at King's Town,
formerly Dunleary.

Ordered, by The House of Commons, to be Printed,
12 May 1826.

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— 1. —

Return to an Order of The Honourable House of Commons,
dated 8th of March 1826;—for

AN ACCOUNT of the total Expense incurred in forming the Harbour at
Dunleary.

Total Expense incurred in forming the Harbour at Dunleary, to } £. 357,773.
the 5th day of January 1826 - - - - - }

Royal Harbour of	}	<i>Rich^d Verschoyle.</i>
George the Fourth,		<i>James Crofton.</i>
King's Town, 16th March 1826.		<i>Ab^r Bradley King.</i>

George Darling,
Secretary and Accountant.

— 2. —

King's Town, Dublin, 15th March 1826.

Return to an Order of The Honourable House of Commons,
dated 8th March 1826;—for

AN ESTIMATE of the Sum that will be necessary for completing the Harbour
at Dunleary.

Estimate grounded on the original Plan, as now in progress.

	£.
779,000 cubic yards of rough rubble work, at 5 s. per yard	194,750
434,666 cubic feet of cut ashlar work, for finishing the ends of the piers, at 3 s. 9 d. per foot	82,000
88,400 square yards of glacis to the sea face of the eastern pier, and the three outer kants of the western pier, at 6 s. per yard	26,520
Contingencies, 10 p. c.	30,327
£.	333,597

John Aird,
Resident Engineer.

Memorandum: The original Estimates for the East and West Piers amounted
to £. 300,000.

We are perfectly satisfied that the above Estimate will fully cover the expense of
the Works mentioned.

Rich^d Verschoyle.
James Crofton.
Ab^r Bradley King.

— 3. —

Return to an Order of The Honourable House of Commons,
dated 9th May 1826 ;—for

Copies of any COMMUNICATIONS between the Lords Commissioners of His Majesty's Treasury, the Lords Commissioners of the Admiralty, and the Lord Lieutenant of Ireland, upon the subject of the Alterations proposed to be made in the original Plan of the Royal Harbour of George the Fourth at King's Town, formerly Dunleary.

— (1.) —

Copy of Treasury Minute, dated 30th July 1823.

MY Lords have again under their consideration, the estimate of the expense of carrying on the works at King's Town, for 1823, and they refer to the Report of the Commissioners, dated February 1822, in which the whole expense of the eastern pier of this work is estimated at 505,000 *l.*, and that of the western pier, at 296,159 *l.*, making together 801,159 *l.*; of which sum it appears that there has been paid out of the Consolidated Fund, between 5th January 1816 and 5th January 1823, the sum of 218,796 *l.* 4*s.* 7*d.*, and that there has been granted by order of Parliament (including the grant of the present session) the sum of 75,000 *l.* leaving the expense to be provided by votes in future years, supposing the estimate not to be exceeded, the sum of 507,363 *l.*

It appears also that towards the discharge of the principal and interest of the sums advanced out of the Consolidated Fund, there has been repaid by the dues levied in the port of Dublin for this work,

			£.	s.	d.
In 1817	-	-	-	-	-
1818	-	-	-	-	-
1819	-	-	-	-	-
1820	-	-	-	-	-
1821	-	-	-	-	-
1822	-	-	-	-	-
Altogether			£. 52,731	19	11

My Lords contemplating the magnitude of the expense remaining to be incurred for this work, and the inadequate return made by the dues appropriated to defray the interest of the funds already applied to it, think it necessary to call for particular information upon the following points, with a view to enable them to determine what measures it may be advisable to submit to Parliament on the subject in the ensuing session.

1. As to the probable utility and importance of the work, so far as the progress already made in it may enable scientific and nautical judges of the subject to determine.
2. As to the point at which the work might be stopped, if it should be decided not to complete it, according to the original plan, so as to derive the utmost possible advantage from the expenditure which has been already incurred for this object.
3. As to the probability of the work as originally projected being executed for the estimated expense.
4. As to any alteration of the original plan, by which if it should be thought necessary to continue the work, the object might be more economically obtained.

They

They therefore desire a letter to be written to Mr. Goulburn, to call the attention of the Lord Lieutenant to this subject, to acquaint His Excellency that my Lords have directed Mr. Whidbey to proceed to Ireland, to survey the works at King's Town, in order to report to this Board upon the points above mentioned, and to request His Excellency to direct the Commissioners to give Mr. Whidbey such information and assistance as may be necessary to enable him to fulfil the instructions of their Lordships.

Write to the Admiralty, stating that my Lords being desirous of obtaining a professional opinion and report upon the works now carrying on at King's Town (late Dunleary Harbour) in Ireland, and having been informed that Mr. Whidbey would be found peculiarly qualified to execute a survey, for that purpose request the Lords of the Admiralty will allow Mr. Whidbey (whom they understand to be now employed by their Lordships) to proceed without delay to Ireland, in conformity with the letter of authority and instructions now preparing for him.

My Lords further desire that the Lords of the Admiralty may be requested to cause an inquiry to be made concerning the nautical advantages and utility of the proposed Harbour at Dunleary, and favour my Lords with their opinion thereupon.

Write to Mr. Whidbey to authorize and instruct him to proceed forthwith in obedience to the directions of this minute.

— (2.) —

Letter from Mr. R. Whidbey to J. C. Herries, Esq.

Sir,

Plymouth, 3d September 1823.

I BEG you will be pleased to inform my Lords Commissioners of His Majesty's Treasury, that in consequence of your communication to me, dated 1st August 1823, received on the 10th of that month from the Admiralty, I directly proceeded to Kingstown (late Dunleary) in Ireland, for the purpose of carrying into effect their Lordships commands, and I request you will be pleased to lay before their Lordships the following observations in reply to the questions put to me in your letter, as contained in the articles 1, 2, 3 and 4.

Article 1st inquires "As to the general utility of the work, with reference to the object which it is intended to effect, and as to the degree in which the progress already made in it may justify your expectation of complete success."

In reply thereto, I beg to say, in the first place, that when the Harbour of Kingstown is completed, it will be of the greatest utility and benefit to the coasting trade navigating those seas, as well as to ships of war below the higher classes that may be stationed on that coast, there being no harbour on that side of Ireland between Curlewford and Waterford where vessels can run for in gales of wind and in distress but the Harbour of Kingstown now making, nor any on the opposite coasts of England and Wales, for which vessels so situated can run, excepting Holyhead and Milford. This is what I conceive to be the object of building the Harbour of Kingstown, and it ought to be finished to a certain point with all speed possible.

In the second place, I beg to observe, that as the greater part of the eastern pier is completed, which gives protection to vessels lying under it in the easterly winds, I am certain that when the western pier is brought nearly to its completion, there will be found a most excellent and safe harbour for ships to run for to obtain shelter.

Article 2d, "As to the point at which the work might be stopped, if it should be desired not to complete it according to the original plan, so as to derive the utmost possible advantage from the expenditure which has already been incurred for this object."

In reply generally to this article, I think the western pier of the greatest utility in making Kingstown a complete harbour; it will not only prevent sand from settling therein, but will give protection to the small coasting vessels, that otherwise would not be able to ride there for the want of it in gales of wind from the W. and N.W., and would in such cases be often driven on shore and lost on the eastern pier. Under these circumstances, I think the western pier very essential to the

making of Kingstown a good harbour; but I would not carry the head of it so near the head of the eastern pier as is drawn in the plan, but I would stop near the commencement of the last kant, making the next kant 50 feet longer, which would reduce the length of the western pier 360 feet. My reason for proposing this is, that I am of opinion that the points of entrance are too near each other, and will produce a confused sea between them in gales of wind, and endanger vessels going into and out of the harbour, if the wall be finished according to the plan, which is not likely to be the case if the heads of the piers be placed more remote from each other; and I conceive that such an increase of opening to the entrance of the harbour would not hurt the anchorage within it by an increase of sea; I therefore think that the western pier may be considerably shortened, as well as its shape altered, for I would not only take away the outer kant, as I have before mentioned, but I would alter the direction of the next kant, extending it in a straight line, so as to place the head of the pier about 400 feet further seaward; this would then increase the anchorage in the harbour, and in deep water at the same time materially extending the entrance into it.

I would also alter the head of the eastern pier, and instead of the outer kant taking the direction which it does, it should form a continuation of the next kant in a straight line, which would give more room for the anchorage than the present plan proposes, and in deep water. This alteration would cover more of the harbour from the sea, without increasing the length of the pier, consequently there would not be any additional expense, and the head would be about 470 feet further seaward, thus increasing the entrance of the harbour from 430 to 800 feet.

I here beg to remark, that these piers are built 13 feet above the height of spring tides, and as they are merely intended as a breakwater, I conceive the 10 feet in height may be reduced, leaving the piers 3 feet above high water spring tides, which is quite high enough, and will give equal security to shipping in the harbour.

By adopting this plan with the western pier, there will be effected a reduction of 90,740 cubic yards of stone at 5s. per yard, according to the prices given me of the cost of stone in quarrying and depositing, thus curtailing the expense of 22,685*l*.

The height being thus reduced 10 feet, leaving the pier 3 feet above high water spring tides, at which height the pier measures 82 feet wide, and conceiving that 50 feet wide at that height is sufficient to give strength and stability to the pier, a reduction of 32 feet in the width may be made, which will produce 82,960 cubic yards, which, at 5s. a cubic yard, will give 20,740*l*, the two sums together forming a total of 43,425*l*.

The unfinished part of the eastern pier may be reduced in the same way as I have proposed for the western pier; but as it is so far advanced towards completion, it may probably be as well to let it be finished as it is now going on, excepting the proposed alteration in its direction.

Article 3, "As to the probability of the work, as originally projected, being executed for the estimated expense."

In reply to this article, it has been stated to me that the sum estimated will cover the expense of finishing the harbour; but as I have not seen the original estimate, I cannot give any opinion thereon.

Article 4, I have answered in my remarks on Article 2; and, in addition to these observations, I further beg leave to say, that I conceive nearly the whole of the estimate of 199,885*l*. 17*s*. 6*d*., for building cut stone walls under low water mark and above it, may be done away, as, in my opinion, such walls will not be wanted. The building of cut stone walls under water with a diving bell to such an extent, and in deep water, will be found extremely tedious, and in my mind of little, if of any use whatever.

I here close my remarks upon Kingstown Harbour; trusting that I have fully answered all the points to which my attention has been directed, and submitting the same to their Lordships consideration.

I have, &c.

(signed) *R. Whidbey.*

To J. C. Herries, Esq.

— (3.) —

Copy of Treasury Minute, dated 18th September 1823.

READ report of Mr. N. Whidbey, dated 3d instant, on the state of the works at Kingstown Harbour in Ireland, and submitting various alterations to be made therein.

Transmit this report to Mr. Goulburn, and desire he will lay the same before the Lord Lieutenant, and move His Excellency to communicate it to the Commissioners for Kingstown Harbour, desiring they will state whether they see any objection to the adoption of these alterations, of which my Lords as at present advised entirely approve, and by which so large a saving on the original estimate may be effected; my Lords being anxious to call His Excellency's particular attention to the great importance of keeping the miscellaneous expenditure of the country as low as possible, which can only be effected by attending to the details of items of expenditure of so large and undefined an extent as that for Kingstown Harbour.

— (4.) —

Letter from J. W. Croker, Esq. to J. C. Herries, Esq. :
With several Enclosures.

Sir,

Admiralty Office, 12 September 1823.

IN return to your letter of the 1st ultimo, signifying the wish of the Lords Commissioners of His Majesty's Treasury that permission should be granted to Mr. Whidbey to survey the works carrying on at Kingstown, and that an inquiry should be made respecting the nautical advantages and utility of the proposed Harbour at Dunleary; I am commanded by my Lords Commissioners of the Admiralty to transmit to you herewith, for the information of the Lords of the Treasury, copies of the several reports from naval officers relative to Kingstown Harbour; observing that Mr. Whidbey having informed my Lords that he had sent to the Treasury direct, a copy of his report, it is not thought necessary that a copy should be transmitted herewith.

In reference to various passages in these reports, relative to the extent of the western pier, and the angles formed by the *kents* of both piers, my Lords consider it proper to enclose also the copy of a letter written by me to Lord Viscount Melville, giving an account of a conference which I had with Mr. Rennie on that subject a little before his death.

That letter was afterwards referred by the Lord Lieutenant of Ireland to the Commissioners of the Harbour, and by them to their engineer; and was the foundation of a full report made by those gentlemen, dated 17 January 1822.— This report seems worthy of the consideration of the Lords of the Treasury, and if it be not already in their office, a copy of it could no doubt be procured from the Irish office where it is lodged.

I am, &c.

J. C. Herries, Esq.

(signed) J. W. Croker.

Sir,

Worthing, 12 August 1823.

I HAVE to acknowledge the receipt of your letter of the 8th instant, desiring me to state, for the information of the Lords Commissioners of the Admiralty, my opinion of the Royal Harbour at Kingstown, (late Dunleary), concerning the nautical advantages and utility of the said harbour, &c. In conformity thereto I beg to state, that I consider the harbour of the greatest importance and advantage both to the port of Dublin and the trade of St. George's Channel, as well as for H. M. ships; and before I quitted that station in 1822 it was sufficiently advanced to

afford good shelter to many vessels that frequented it; some in distress, that could have found no other port with sufficient water for them to enter.

With respect to the plan according to which it was intended (in 1822) to be completed, it appeared to me that it would leave the entrance much too contracted, and that the harbour would be equally secure from all winds, should the western pier not be extended so far as projected by the plan, by about 200 feet. In that case it would leave an entrance sufficient for ships of a large class (frigates) to work in, which will be found of material consequence, as the prevailing winds blow off the Wicklow mountains, right out of the harbour, which in all other respects will be easy of access; and I do not apprehend that it would at all endanger the entrance filling up, hitherto there being no appearance of any settlement against the pier.

I am, &c.

J. Barrow, Esq.

(signed) C. G. Randolph,
Comr.

Sir,

Southsea Lodge, near Portsmouth, 12 August 1823.

IN answer to your letter of the 8th instant, conveying to me their Lordships directions to state my opinion concerning the nautical advantages and utility of Royal Harbour, (formerly Dunleary), I beg to acquaint you, for their Lordships information, that I conceive the harbour possesses the greatest possible advantages and utility, for even in the unfinished state it was in when the Royal Squadron was there, the whole of the ships were enabled to moor perfectly sheltered from the south-east and easterly wind. I am however doubtful if it will answer, if finished as I understand it was intended to be, as the entrance will be very narrow, and I fear the sand will form a bank from the north-west pier head, by the sea heaving on it in south-east and easterly gales, though I must say I was informed the sand had not accumulated on that part of the south-east side of the pier that was finished when I was in the harbour.

I apprehend that vessels running, particularly in the night, would run great risk of getting upon the lee pier head, by giving the south-east pier head (upon which the light-house is to be built) too wide a berth, and vessels bound into Dublin that found it necessary to take shelter in a gale of wind, to stop for water over the bar, might be detained some days, before they could get out of the harbour, should it be finished as intended.

Instead of going on with the pier running off from Dunleary, I think it would be better if the south-east pier was extended considerably further than proposed, in a direction towards the Pigeon House. Their Lordships will observe, by a reference to the plan, that there is very little fetch with the wind from the north-west, and therefore the north-west pier can be of little use, until vessels load and unload in the harbour, when it would be time enough, if then found necessary, to form that pier.

I am confident that the harbour will be of the greatest importance to the trade of Dublin, as well as the trade and King's ships navigating St. George's Channel, as it can be taken at any time, or in the worst weather, if clear enough to see any of the lights near Dublin Bay, unless it should be finished as proposed, when it would require much caution in rounding the south-east pier head so close as to prevent a ship from being thrown on the lee pier head.

I regret not being able to be more explicit, as I have mislaid the remarks I made whilst in that port, as well as a plan of the intended harbour.

I am, &c.

J. W. Croker, Esq.

(signed) James A. Gordon,
Captain.

H. M. Yacht, Royal Sovereign,
Deptford, 13th August 1823.

Sir,

I HAVE received your letter of the 8th instant, desiring me to report my opinion concerning the nautical advantages and utility of the Royal Harbour, (formerly Dunleary), for the information of the Lords Commissioners of the Admiralty.

When the Royal squadron, to the number of 12 sail (as well as many other vessels), was anchored there during His Majesty's visit to Dublin, the wind being a good deal to the S. E., which brought in a considerable swell, but the ships rode in great security, and their Lordships will recollect that two large frigates (the *Active* and *Liffey*) were among the number.

At that time (September 1821) the pier was carried out two thousand feet, and it was quite evident that as the work was proceeded in, the shelter for large ships, as well as the general security of the harbour, would be very much improved.

From the plan of the harbour it appeared that the entrance would be very much contracted when the work was completed; and it was the opinion of all the officers in command of H. M. ships there, with whom I conversed on the subject, as well as my own, that it would be very narrow for a ship to run for in a dark and tempestuous night. We then offered an opinion, that it would be a great improvement to carry out the eastern pier one thousand feet farther (from the first angle it makes) than was intended by Mr. Rennie's plan, before the returning angle was formed, which was to complete the pier, by which alteration the shelter would have been much extended at no great increase of expense; and we also thought it would not be necessary to carry out the western pier, so as to contract the entrance in the manner intended; but after my return from Ireland I had an opportunity of hearing Mr. Rennie's opinion on the subject, which satisfied me that the western pier was essential, to prevent the harbour from filling up.

As to the general utility of this magnificent pier, which does so much honour to the able engineer who planned it, there can be no doubt that, upon a coast where there is no shelter except in tide harbours, that it must be of incalculable advantage to all ships navigating in St. George's Channel, as well as to vessels trading to the port of Dublin.

I am, &c.

J. W. Croker, Esq. }
&c. &c. &c. }

(signed) *Chas. Adam,*
Captain.

Sir,

Fair Oak Lodge, near Petersfield, 14th August 1823.

IN reply to your letter of the 8th instant, conveying to me the commands of the Lords Commissioners of the Admiralty, that I should report my opinion on the subject therein referred to, I have the honour to state that I have no difficulty in giving a very favourable one with respect to the general advantages to be derived to H. M. ships, as well as to the trade, by the use of Royal Harbour, late Dunleary.

At the time I visited that port, in the year 1821, the eastern pier or breakwater, though much advanced, had still to be continued (I understood) five hundred feet further out, and when completed would certainly afford good shelter, in all winds and weather, to a squadron of men-of-war or fleet of merchant vessels.

I understood at the period alluded to, that it was in contemplation to throw out a pier from the west-north-western side of Royal Harbour, which if carried into effect would in my humble opinion very much diminish its advantages as a port, as it would then become a basin not only much more difficult of access by day, but inaccessible as a place to run for at night; and I further conceive that a bar would very likely soon form across the entrance. For these reasons I am clearly of opinion, that as a port to answer all general purposes, the completion of the eastern pier alone would best secure the purposes of making Royal Harbour an admirable place of safety for H. M. ships and the merchant service.

I have, &c.

John Barrow, Esq.

(signed) *Charles Paget,*
Rear Admiral.

Sir,

Edinburgh, 15th August 1823.

IN reply to your letter of the 8th instant, I have to acquaint you, for the information of the Lords Commissioners of the Admiralty, that I do not think there can be any doubt as to the great advantages the trade of the port of Dublin, and the trade of the King's ships navigating St. George's Channel, must derive from having Royal Harbour to repair to, either for the purposes of commerce, or for occasional shelter, &c. The squadron of which the *Liffey*, under my command, was one, experienced the utility of it even in the unfinished state the breakwater was at the time of His Majesty's visit to Ireland, when it afforded us a safe anchorage, which we could not otherwise have found in Dublin Bay; I was, however, at that time decidedly of opinion that the plan on which it was intended to finish the harbour was not the best, and I signed a paper stating that opinion, and recommending the outer pier or breakwater to be projected further out in the direction of Howth, than was proposed; I also thought that the projected inner pier would be a disadvantage: my objection was the difficulty it would cause to ships wishing to enter the harbour with a strong tide, and blowing strong; indeed I am certain if the entrance were made as narrow as proposed, that it would be very difficult of access, and that ships would sometimes, in consequence, be afraid to run for it in bad weather, particularly during the night, when it might be of the utmost consequence to get shelter.

If the harbour were formed by an outer breakwater only, then ships of any size and description might bear up for it, and get safely into it any time, and in any weather; nor do I think any swell could set in to prevent the merchant vessels from loading and unloading alongside the wharf, which I believe it is intended they should do.

I have been told many inconveniences might arise to the harbour from back-water, the setting of the tide, &c., in consequence of not having an inner breakwater; but on this point I do not feel myself capable of giving an opinion; I only know the difficulty and danger of a narrow entrance between two stone piers, when there is a tide, and where there is no safe anchorage outside for ships, which having got so far, must make the attempt to go on.

I am, &c.

J. Barrow, Esq.

(signed) *Henry Duncan*,
Captain.

Sir,

5, County Terrace, Kent Road, August 16, 1823.

I BEG to state (in reply to your letter containing their Lordships directions for me to give my opinion as to the nautical advantages and utility of Royal Harbour, formerly Dunleary, in the state I found it in August 1821, and the state in which I may have understood it was intended to extend it) that being detached from Holyhead in H. M. sloop *Camelion*, then under my command, to lay down moorings for the Royal George yacht, and never having visited the Bay of Dublin before, I was much gratified on my arrival, finding so noble a pier in such a state of forwardness as to afford shelter to all the Royal and Irish squadrons, amounting, including two frigates, to twenty sail of vessels, from southerly and easterly gales, and moored with their own anchors and cables (excepting the Royal George yacht).

And as the Royal squadron received orders on the 3d September to move outside the pier, and remain at single anchor, the outer part of the pier bearing S. E. by compass, in five fathoms water, we had a very fair opportunity of deciding the advantages of being to the northward of the pier (although quite in its infancy) to the anchorage we then occupied, for a strong wind came on from the S. E. during the night, and the Active frigate was obliged to let go a second anchor. The yachts under the pier were just as quiet as if in harbour.

The first day we quitted Royal Harbour, on His Majesty's return to England, the wind, which was at N.W. on our starting, gradually backed to the southward by the afternoon. The general signal was in consequence given for the squadron to bear up, and in the evening we once more took up our old anchorage under the pier; we had a strong gale at S. and S. S. E. all night, and struck top-gallant-masts, but we laid as snug and as secure as if in any harbour in the United Kingdom.

The

The next morning, and during the gale, the *Helicon*, Captain Dawkins, ran in for shelter from sea, under his close-reefed main-topsail and reefed foresail.

It was not thought advisable again to take an outside birth previous to quitting; but the squadron weighed from the inner anchorage, and although the winds were light and baffling, without any inconvenience.

We remained at Royal Harbour (most of the Irish squadron having quitted a few days subsequent to our arrival,) three weeks in perfect security; the *Royal George* yacht, the inside vessel, in four fathoms, the rest of the squadron in a line with the pier, in four and four and a half fathoms water, their small bowers to the W. N. W. and best bowers to the E. S. E.

The *Shamrock* revenue brig anchored just outside the pier preparatory to sailing; a gale came on from the E. S. E.; she drove, knocked her rudder off on the west shore, and but for the pier, as it was in August 1821, must have been lost; this occurrence took place while we were there.

I am, I believe, correct in stating that the *Pandora*, 18, Captain Jones, a few years back was caught in the Bay of Dublin in an E. S. E. gale, and after waiting with great anxiety for high water, was at its height obliged to cut and run inside the Pigeon-House. This same vessel, in August 1821, shifted her bowsprit with her fore-yard with great ease, although the wind was unsettled and blowing strong from the southward, and was moored the outside vessel of all the squadron then under the pier. I have written thus much to show the security received by men-of-war, and equally so by merchantmen in the year before stated, and that I considered the progressive state we left it in, quite competent to afford all the necessary shelter for any ships up to frigates running for security in south-easterly gales, and that the trade of Dublin must have materially benefited with other ships visiting this port, whether for shelter, or in cargoes direct.

An anchorage like the one in question had long been wished for by those accustomed to navigate St. George's Channel: the seamen now will gain confidence by a knowledge of its existence (if not deterred by heavy port duties), and relieved from a great deal of natural anxiety attendant on navigating such a channel in long dark winter nights; for with the light on Howth, the three lights on the edge of the Kish Sand, the Bay can at most times be approached with facility, and coupled with a light I have understood is to be placed on the southern pitch of the harbour's entrance, and a flag by day, will realize the object of this magnificent undertaking, by the ease and safety all vessels may, direct from sea, enter at once Royal Harbour. The ships trading to and from Liverpool must fully appreciate this anchorage.

I submit to their Lordships whether it would not be advisable, and prevent a great deal of damage, to make all vessels, when near enough, and running in the night for the Harbour entrance, burn a blue light, which being seen by the vessels at anchor inside, they are immediately to show two lights vertical at their peak, and one at their bowsprit end: this arrangement would allow the stranger to place his ship to a certainty. These regulations, if adopted, not only to appear in the directions for this Harbour, but posted up for general information at all the custom-houses in the United Kingdom.

Although I looked over a chart which was sent to Rear Admiral the Honourable Sir Charles Paget, by Captain George Bordett, R. N., and said to be a plan of the intended Harbour when complete; still on making inquiries of the superintendent of the pier, he did not appear to be thoroughly master of how far the piers were to be carried out. But I feel satisfied as to the actual security, (on reference to chart) when the southern pier, with its elbow, is complete, covering the hill of Howth, that ships will ride in perfect safety with any wind that blows. But on the other hand, if ships are to load and unload in Royal Harbour, instead of going up to the custom-house, or as a naval depot, then the N. W. pier and elbow would be necessary, and I understood (when there) with water inside, in most parts sufficient for line-of-battle-ships. There appeared good situations for merchants warehouses, to load and unload under the crane, as well as storehouses, and for fixing sheers on shore for masting and unmasking men-of-war; and I presume the certain communication between Royal Harbour and London, via Holyhead, through steam packets, will be an additional reason why this spot should be made as complete and secure an asylum as we have to boast of.

The Royal squadron found only one inconvenience arising from the difficulty of receiving a sufficient quantity of fresh water; although at a great expense, sloops were hired for the express purpose to go backwards and forwards to the city; but for two or three days together they could not get over the bar, from bad weather, and the same from returning with empty casks.

If Royal Harbour is completed with the two arms and elbows forming a sufficient entrance in the centre, it becomes a question, *having no back water*, whether strong N.E. gales will not throw in a great quantity of mud and sand, and thereby shoaling this anchorage to some extent.

In complying with their Lordships directions, having had nothing but my memory to assist me in the execution of them, I trust they will grant me their indulgence. But should ever it fall to my lot to serve in the Channel I have been writing on, it will be a pleasant feeling to know, even up to 1821, I have such an anchorage of security from southerly and easterly gales as Royal Harbour.

I have, &c.

John Barrow, Esq.

(signed) *W^m Mingay,*
Captain.

My Lord,

William and Mary Yacht,
Kingstown Harbour, 17th August 1823.

IN pursuance of your Excellency's commands, I proceed to state my opinion upon the utility of the Royal Harbour of George the Fourth, now constructing at Kingstown, and the propriety or necessity of persevering to its completion.

Deeply sensible of the importance of this inquiry, with a view on the one hand to the protection of human life, and the preservation and promotion of the shipping and trade of this port, and the country generally, and on the other hand regarding the economy of the public resources, I have minutely examined the subject in all its bearings; ascertained the dangers of the Bay, and the operation of the winds and tides therein; consulted with the persons most competent to furnish accurate information, and examined the several reports and other official papers which I have been able to collect connected with the subject.

The consideration of the most convenient site for a safety harbour in the Bay of Dublin has occupied the attention of the Irish Government for more than a century; the subject has been referred to, and reported upon by the most eminent engineers and nautical men. I have perused the Reports of Sir J. W. Page, Captain Joseph Huddart, W. Bligh, Mr. John Rennie, and the Directors of the Ballast Office and the Inland Navigation.

Whatever differences of opinion existed before, there is no longer any question but Dunleary or Kingstown is the most suitable situation for such asylum. I proceed, therefore, to the inquiry whether it is necessary that the works should be completed according to the present plan. I cannot hesitate a moment in declaring my most decided opinion, that the dangers which have existed will not be counteracted, or those advantages insured, unless the works be proceeded upon to their completion, and that, too, with as little delay as circumstances will admit; the words of the Act 1 Geo. IV. are most just and expressive in declaring this necessity. I submit to your Excellency's consideration the 3d section of the preamble to that Act, which declares, "that it is found expedient, in order to make the said Harbour a complete and perfectly safe asylum or place of refuge, not only to the ships and vessels trading to the port of Dublin, and to the ships and vessels of His Majesty's navy which may be in the Irish Channel, but to all the shipping interest trading or passing through St. George's Channel and the Irish Sea, to erect a second pier to the west of the said (eastern) pier which has been so commenced, &c."

The truth of this position is attested by a memorial addressed to the Commissioners for building Dunleary Harbour, and purporting to be signed by the captains of H. M. ships, commanders of several Admiralty and Revenue cruisers stationed and cruising in St. George's Channel, masters of packets and trading vessels, merchants and mariners trading to and from the port of Dublin. They state, "that in

in their opinion, without the western pier there will be no harbour, and with the eastern pier a protected roadstead only, so that shipping at anchor westward thereof, on a change of wind would be exposed to a high swell of the sea, with a reach from Merriem Strand to Sutton or Howth, a distance of five miles, by which the protection afforded by the eastern pier would become a precarious place of anchorage for shipping to resort to in winter most particularly, but when judiciously completed will prove of the greatest advantage to the United Kingdom, and particularly to the city of Dublin, as all shipping, when loaded at Dublin and ready for sea, may proceed for the aforesaid harbour with the greatest safety, let their burthen be ever so considerable, and enter the same at any time of tide, and consequently can wait there for a fair wind, take advantage thereof, and may at discretion sail into the Channel clear of the banks."

This opinion is confirmed by the petition of the Commissioners of the Harbour to Parliament in 1820, which contains a variety of views upon the subject, eminently well worthy of attention, as placing beyond doubt the advantage and necessity of erecting the western pier; and the propriety of these views is further attested and corroborated by the correspondence of the Commissioners of the Harbour with the Directors of the Ballast Office and Mr. Rennie.

It is admitted on all hands that the present plan provides abundant accommodation for all shipping likely at any time to lie in this port, as the harbour occupies 230 English acres.

The eastern pier is intended to extend 4,160 feet, and 3,622 of those in rough work are already completed. The western pier is intended to extend 5,030 feet, and of those, 3,176 in rough work are already completed. At present the eastern pier is extended six feet each week, and the western pier 17 feet; no doubt the prosecution of the work must be attended with considerable expense; but it is on the other hand to be considered, that by following it up with promptitude and alacrity to its completion, it will insure a most important and permanent benefit; whereas the cessation or interruption of the works in their present incomplete condition, would leave the admitted evils without remedy, and produce a necessity for constant recurrence to further expenses. All the necessary arrangements for carrying on such ponderous works being now in a perfect condition, after having been prepared at vast trouble and expense, and the materials being now to be had without any expense, which is stated to have reduced the estimate 80,000 £, and the workmen well experienced in their several occupations, it appears to me that these are circumstances well worthy of consideration; for if the proceedings on the works were to be postponed at present, with a view to their being resumed at any future period, it is plain that all the immense expenses incurred in order to place the means of working in the same good plight as they now are in, must be repeated before a single stone could be added to either pier. I have endeavoured to compress within as narrow a space as possible the opinions of those who have been selected by the public authorities at different periods, as the most competent judges upon the several questions into which I have divided the inquiry, adding some observations as I went along.

I must pray your Excellency's indulgence while I now state generally, but briefly, the summary of my own opinions, maturely formed after my personal observations, and the aid obtained from those high authorities to which I have referred, having at the same time before my view the facts and arguments upon which their judgment was exercised.

The great advantage of a safe anchorage in the Bay of Dublin, to the general trade that passes up and down St. George's Channel, cannot be doubted, because, upon the Irish coast, from Cove to Belfast, a distance of 238 miles, there is not an anchorage a ship would wish to make for in a south-west gale, which is almost always attended with thick weather and a heavy sea; indeed there are only two harbours on that coast, Waterford and Carlingford.

Waterford is a bar-harbour, and can only be entered at certain times of the tide with a pilot.

Carlingford.—The entrance into this harbour is narrow and dangerous, and can only be entered also at certain times of tide, and with a leading wind; it is neces-

sary likewise to have a pilot, but they cannot come off in bad weather, so that when there was not an asylum harbour in the Bay of Dublin, ships outward-bound in St. George's Channel, if they were to the eastward of Cove, were obliged to bear up for Belfast, for they do not like the Welch coast, it being a lee one when the wind shifts to the N. N. W. which it almost always does after a S. W. gale; therefore, in a general point of view, this harbour will be of incalculable benefit to the great trade which passes up and down St. George's Channel.

The Bay of Dublin has perhaps been more fatal to seamen and ships than any in the world; for a ship once caught in it in a gale of wind from E. N. E. to S. S. E. must ride it out at her anchors, or go on shore, and from the nature of that shore, the whole of the crews almost invariably have perished; for should they be fortunate enough to get a pilot off, it is only ships of a certain draught of water that can get over the bar of Dublin*, and that at the very top of high water, and not then if the sea is running heavy; and even when they get into Perlbeigh (the anchorage inside the light-house) they cannot be considered safe in an easterly gale. The harbour of Kingstown must therefore be considered of great national importance, inasmuch as it will be annually a saving of many lives and much property.

Dublin ought to be, and I have no doubt will before long become a place of great trade, which it never could be without this harbour; for was the port of Dublin much easier of access than it has been shown to be, still the bay, without a protected anchorage, must have continued the dread of seamen; and now that the late changes, erroneously stated improvements, on the north side have been made in the port of Dublin, I believe that there is but one opinion, and that is, that the entrance is much more unsafe than ever, and daily becoming worse in consequence thereof. In short, if Dublin ever becomes a city of great general trade, she will owe it to the harbour at Kingstown. This argument brings me to consider the propriety of finishing the western pier, for without it it may be a place of refuge against certain winds, though an unsafe one, but never a harbour for trade, or a general asylum.

To give an instance: last winter, during the heavy gales on the 6th December, the wind suddenly shifted round from S. W. to N. W. (which every seaman knows it does ninety-nine times out of a hundred,) a considerable sea, more than could be supposed by any person not acquainted with the bay, came along with it; three vessels were driven to sea; had they been lying at cable's length further in, or had the wind come a point round more to the northward, they would not have cleared the eastern pier, the sea at the time washing over it, and I do not believe a man would have been saved out of them; whereas if the western pier had been completed, they could have rode it out with perfect ease and security.

In conclusion I will assert, without fear of contradiction from any nautical man, that this harbour is one of the greatest benefits ever conferred on the great shipping interests that navigate St. George's Channel; and I must also add my surprise, should any well-informed and disinterested person express an opinion opposite to this impression, that the Royal Harbour at Kingstown must be, if completed, one of the most useful public works that ever was undertaken for the good of this country. I do not therefore entertain the slightest doubt that the completion of this great work must increase most rapidly the trade of Dublin; and for all these reasons it is my deliberate and decided opinion that it should be proceeded upon with as little delay as possible.

I have, &c.

(signed) C. Malcolm.

His Excellency the Lord Lieutenant.

Sir,

Semiramis, Cork Harbour, 23d August 1823.

WITH reference to Mr. Barrow's letter of the 8th instant, signifying the directions of the Lords Commissioners of the Admiralty to me, to call upon the captains under my orders who may be best acquainted with the Royal Harbour, formerly Dunleary, to state their opinions concerning the natural advantages and utility of the said harbour, &c. &c. &c., I have to request you will inform their Lordships that Captains Malcolm and Simpson, of H. M. yacht William and Mary,

* 14 feet common
tides;
16 feet spring
tides.

Mary, and of H. M. sloop *Gannet*, being the only captains now under my command who have been in that harbour, I called upon them to state their opinions on the several points mentioned in Mr. Barrow's letter, copies of whose reports I herewith transmit for their Lordships information; and although their Lordships have not called upon me to give any opinion in regard to the said harbour, yet as I had so lately an opportunity of seeing it, and of judging of its advantages and utility, I consider it my duty to state to their Lordships that I entirely concur in the opinions of Captains Malcolm and Simpson regarding it.

I am, &c.

J. W. Croker, Esq.

(signed) *Colville.*

My Lord,

William and Mary Yacht,
Kingstown, 18th August 1823.

I SHOULD have answered your Lordship's letter of the 12th instant at a much earlier period; but when I received it I was upon the point of drawing up a report upon the subject therein alluded to, by the direction of His Excellency the Lord Lieutenant, an inquiry having been ordered into the utility of the harbour, with reference to the great expense of completing it; I cannot therefore better answer your Lordship's letter than by transmitting the enclosed copy of the report which I made to His Excellency, for the information of the Lords Commissioners of the Admiralty, and I hope my opinion will be found to agree with your own observations when you visited Dublin.

Your Lordship will observe, that in the report I dwell strongly upon the insecurity of the anchorage in the present state of the harbour, but it is to the general anchorage only to which I allude; because, in the angle of the harbour, where the yacht and tender have their moorings, they are quite safe in any weather.

I have also to inform your Lordship, that Mr. Whidbey, from the Breakwater at Plymouth, is shortly expected here, for the purpose of inspecting the works in question.

I have, &c.

(signed) *Charles Malcolm.*

P.S. - Mr. Whidbey arrived this afternoon.

Rear-Admiral the Right hon. }
Lord Colville. }

My Lord,

H. M. Sloop *Gannet*,
Ardbear Harbour, 18th August 1823.

IN reply to your Lordship's letter of the 12th instant, directing me to state my opinion concerning the natural advantages and utility of Royal Harbour, formerly Dunleary, I have the honour to enclose to your Lordship a plan of the harbour and the extent of the pier, from memory, at the time the *Gannet* was there, as well as what I understood it was intended to be when complete. In the state it then was, the brig rode out several very heavy gales in perfect safety, and without feeling the influence of any swell rolling in from the Channel. As to its utility in point of situation, I beg to give your Lordship a practical elucidation:—On the night of the 23d November last, having been blown to the eastward from off Cork, in a gale from the S. W., the fore-try-sail and fore-storm-staysail blown away by the violence of the wind, and the sloop in the most perilous situation. At 8 o'clock p. m. the master got a latitude of the pole-star, which confirmed our reckoning. At 9 we made the Tuskar Light. I then bore up for Royal Harbour, and anchored there in perfect safety before daylight in the morning, there being no other port in which we could have got shelter.

Your Lordship will see by the chart that there is no harbour from Cork to Belfast where a vessel of 300 tons can get protection, all along the south and east coast of Ireland, but Royal Harbour, if we except Waterford (which is a bar harbour), and often dangerous, from the strong tides and heavy seas on the bar. The natural advantages of the former consist in the ease with which it admits at

all times of ingress and egress. All the dangers being above water, it requires no pilot; and its situation for the shelter of ships caught in gales in the Channel, has many advantages, both for the man-of-war and merchant vessel. Its local advantages, as regards the trade of the port of Dublin, I think must be considerable, as vessels drawing fourteen feet water always lie aground in Dublin Bay, which was an unsafe anchorage at all times of the year, with certain winds for ships of all descriptions.

These observations might be extended, but as your Lordship has opportunities of gaining information from far abler observations than myself, I have to apologize for extending these remarks, which I fear can only be considered as very desultory.

I have, &c.
(signed) *W. Simpson,*
Comr.

Rear-Admiral the Right hon. }
Lord Colville. }

My dear Lord,

Admiralty Office, 15 November 1821.

IN consequence of Captain Duncan's observations on the subject of the western pier at Dunleary, I think it is proper to put upon paper what I have stated to your Lordship and Captain Duncan, in our conversation on the subject.

Having both heard from others and made myself on the spot certain observations tending to a conclusion that the western pier was, if not superfluous, at least carried to an unnecessary extent, and brought at its termination too near the eastern pier, I took an opportunity of stating these observations to Mr. Rennie, in a visit he made me a few days before his death. I regret exceedingly that I cannot recollect the various explanations which he gave me upon all the points in question. His large chart and plan of the harbour was before us, and he entered minutely into all the reasons which induced him to adopt the site and form therein given to the western pier. His opinion on every point was unshaken by my observations, and I must add, though I cannot venture to repeat his reasons, that their effect was to bring me round to his opinion. I can however venture to say, that his principal, though not only reason, for adopting a western pier, was to prevent an accumulation of sand in the harbour, which would be inevitable if there was not a pier, and if the termination of that pier was not calculated on a consideration of the prevailing winds, and some local circumstances why he had adopted the proposed scheme for the entrance of the harbour and the various inflexions of the piers; but little thinking this was to be my last conversation with him, and having the prospect of early official communication on the subject, I did not charge my memory with the details of his reasoning, which is now much to be regretted, as it is, I suppose, in vain to hope that any opinion which could be now obtained on these points would be equally satisfactory.

I am, &c.
(signed) *J. W. Croker.*

To Viscount Melville.

Royal Harbour of George the Fourth,
Board Room, 17 January 1822.

Sir,

WE have to acknowledge the receipt of a letter from the Right honourable Charles Grant, of the 28th December 1821, enclosing the following copy of a letter from John Wilson Croker, Esq. to the First Lord of the Admiralty; viz.

[for Mr. Croker's letter, see the preceding, dated 15th November 1821;]

and signifying the desire of the then Lord Lieutenant, that the same should be submitted to our engineer, and communicate the result, together with our opinion thereon. In obedience to these commands we now submit the report of our engineer, as underneath.

Sir,

Kingstown, 15th January 1822.

I HAVE to acknowledge the receipt of a copy of a letter, 15th November 1821, addressed by the Secretary to the Lords of the Admiralty to Lord Melville, containing an opinion of Captain Duncan, R. N. tending to a conclusion that the western

western pier for Dunleary, now Kingstown Harbour, was, if not superfluous, at least carried to an unnecessary extent, and brought at its termination too near the eastern pier, which observation Mr. Croker took an opportunity of stating to Mr. Rennie, who in consequence explained the various considerations that induced him to recommend a western pier, and the reasons he had for the site and form that he had laid down for it; this communication being forwarded to His Excellency the Lord Lieutenant, was transmitted by the Right hon. Charles Grant to the Commissioners, who have submitted it for my consideration.

Upon so important a subject I cannot but consider it a fortunate circumstance that Mr. Croker has put on record the substance of these explanations, which brought him round to approve of the reasons laid down by Mr. Rennie for the necessity of a western pier, particularly since they were the last ever to be given by him on the subject. Though I feel that I cannot add any thing to the weight that these explanations must carry, I may be permitted to observe, that the very important purpose of preventing an accumulation of sand in the harbour, would in my opinion be of itself a sufficient reason for having a western pier. Were it not for that, and if the purposes of the harbour were exclusively or even principally for ships of war, always well found in management and otherwise, the subject of its construction might admit of different considerations to what it will do when viewed as an asylum for all classes of trading vessels. The eastern pier will afford shelter from south-east and easterly winds to such vessels as can turn in and anchor any way close to it, but without a western pier to break off the swell of the sea that will lap round the end of the other, the space for safe anchorage even in gales from these points, will be very limited in a comparative point of view; that vessels but weakly manned, or having their crews exhausted from fatigue at sea, will have difficulty in gaining in, while to vessels running in in such circumstances, that may have lost their anchors and cables elsewhere, it will be utterly unavailable as a place of safety.

Without a western pier the anchorage ground will be open to winds from N.W., N., and round to N. E., under a reach of sea of four, five and six miles respectively; and experience has shown in gales of wind from these quarters, which are very frequent, that even vessels of considerable burthen do not ride easily; and when the wind, after having blown easterly, and sets up a heavy swell of sea, changes suddenly round, as often happens in bad weather, it increases the swell, so as to render it much more unsafe; and to vessels dragging or driven from their anchors under such circumstances, the east pier acts only as a lee shore, to hasten their destruction, as in the recent instance of the ship *Eliza*.

Under these considerations alone, formed from attentive observations of the state of Dublin Bay throughout the different seasons of the year, I am humbly of opinion, that without a western pier the good effects of the harbour, if without it it may be called a harbour, would be very limited in general, and of little or no avail whatever to the ordinary classes of vessels trading in the Irish Channel, during the prevailing winds on this part of the coast; and bearing in mind the accumulation of sand, its utility must be still more apparent.

The works are proceeding according to the plan laid down by Mr. Rennie, and I am not aware that the Commissioners have any intention of deviating therefrom: was any recommendation necessary from me on the subject, it would be, that they should not, otherwise than upon the most mature consideration, being aware that it was formed from much deliberation, on the various bearings of tides of currents, connected with the situation, and convinced it is upon the best principles for obtaining the object in view, namely an asylum harbour for all classes of vessels.

I am, &c.

George Darling, Esq.

(signed) John Aird.

And we have to state to you for the information of His Excellency the Lord Lieutenant, that we fully approve of and coincide in all the reasons therein urged in support of the necessity for a western pier for the Royal Harbour of George the Fourth at Kingstown, formerly Dunleary; but we have additional matter to communicate, on points stated in Mr. Croker's letter, obtained through frequent

explanatory conversations had by us with our engineer, the late Mr. Rennie, and the practical observations which our experience of five years, employed in constant anxiety for the future well doing of the harbour, has enabled us to come to certain conclusions upon.

As to the accumulation of sand, although essential to be provided against, if such should appear to be the natural inclination of the harbour, we have competent knowledge that that was not a primary reason for the erection of a west pier; that was a point of necessity which experience only could show; and, in corroboration of this assertion, we beg leave to refer His Excellency to our representation to the late Lord Lieutenant, dated 15th October 1818, which will show to His Excellency, that the idea of a western pier originated with us, and for the sole purpose of securing a safe and easy riding in the harbour to ill-formed and ill-manned trading vessels and their exhausted crews. It will also appear therefrom, that two sites were proposed for a western pier, the one from a spot more to the eastward, called Docking Point, the other from the point from which the present pier grows, and which, though embracing a surface of water of one half greater extent, was estimated to be erected at only one thirty-seventh part of greater expense, securing within it the old harbour of Dunleary, rendering it perfectly sufficient for the local trade of the district, and availing ourselves at the same time of the only spot on the southern coast of Dublin, on which a vessel entering the harbour without proper anchors could run on ground with safety, a circumstance desirable in all harbours, but most particularly in those of asylum.

We report to His Excellency, that every succeeding day has strengthened our conviction of the ultimate utility of the western pier: we have witnessed merchant vessels, not properly provided with weight in anchors, or length of cable for such depth of water, dragging or parting with the wind off shore, when at the same time the smallest of His Majesty's cruisers have ridden in safety; to a vessel of war there cannot be danger within the harbour. To provide for the safety of the trade of the United Kingdom was the principal object of the merchants and traders of the city of Dublin, when they entreated the boon of the commencement of this work at their expense. It certainly was then with but a speculation of success; every mind, whether formerly prejudiced or not, is now daily better satisfied of its great advantages; and when the western pier gets somewhat further advanced, all description of vessels will find perfect security within the harbour from all points.

On that part of Mr. Croker's letter which alludes to the plan of the pier, and the proposed scheme for the entrance of the harbour, we have only to observe, that that belonged altogether to Mr. Rennie, who explained to us that the inflexions on each pier were, in the first place, intended to give a proper current to flood and ebb tides, so as to pass the mouth of the harbour without causing too great an agitation immediately at its entrance; and, secondly, to provide the greatest possible space for shelter near the mouth on turning in, and that the proposed scheme of inverted lines at the entrance of the harbour was calculated by causing a re-action of the effects of the tide upon each face, to quiet all agitation of the current of the tide flowing or ebbing, and thereby occasion comparatively smooth water at all times in the entrance.

We have nothing further at present to add, but that we understand that one of His Majesty's ships of war is at present in the harbour, on a survey of its merits or otherwise; that we await the report of the officer commanding with confidence, and that we purpose making him a tender of our assistance in any mode which he may deem most conducive to obtain the knowledge he has been instructed to seek respecting this harbour.

We have, &c.

(signed) *Castle Coote.*
Richard Verschoyle.
James Crofton.
Graves Channey Swan.
Francis Hodgkinson.
Ab^d Bradley King.

Right hon. H. Goulburn,

— (5) —

Letter from John Barrow, Esq. to J. C. Herries, Esq.—
With one Enclosure.

Sir, Admiralty Office, 6th October 1823.

WITH reference to my letter of the 12th of last month, enclosing various reports from naval officers, on the subject of the proposed Harbour at Dunleary, I am commanded by my Lords Commissioners of the Admiralty to transmit to you, for the information of the Lords of His Majesty's Treasury, a copy of a letter from Captain Sir Charles Burrard on the same subject.

I am, &c.

J. C. Herries, Esq.

(signed) *John Barrow.*

Sir, Revenge, at Sea, 25th August 1823.

IN return to Mr. Barrow's letter of the 8th instant, signifying the direction of my Lords Commissioners of the Admiralty to me to report on Royal Harbour, formerly Dunleary, I beg leave to state that when there in August and September 1821, the eastern pier ran out about half a mile in a northerly direction, with its outer end rounding in a little to the westward, and close in on the western side, of which the squadron, then in attendance on His Majesty, were moored, having from three to five fathoms at low water springs, where it was sheltered from all winds, excepting those from about N.N.E. to N.E. or N.E. by E. when a considerable swell set in, which the intended extension of the western curve of the eastern pier will entirely prohibit, and even then to cruisers in St. George's Channel caught in S.E. or easterly gales, and to merchant ships so situated or bound to Dublin, without having water over the bar, it afforded excellent shelter. The western pier, at the period before-mentioned, projected only about a quarter of a mile out; it appeared at least half a mile distant from the other, and was to the best of my recollection intended to be run out about a quarter of a mile further, in a parallel direction with the other, and then to round out to the eastward, which with the other pier and the land, will form one of the finest harbours in the world, and be soon a great advantage to the trade of Dublin.

I am, &c.

(signed) *Chas Burrard,*
Captain.

J. W. Croker, Esq.

— (6) —

Letter from John Barrow, Esq. to S. R. Lushington, Esq.—
With two Enclosures.

Sir, Admiralty Office, 18th March 1824.

WITH reference to my letter of the 12th September last, enclosing copies of several reports from naval officers relative to Kingstown Harbour, I am commanded by my Lords Commissioners of the Admiralty to transmit to you herewith, for the information of the Lords Commissioners of His Majesty's Treasury, copies of two letters from Captain Malcolm of H. M. yacht William and Mary, and Lieutenant Gould, late commander of the Dwarf cutter, which latter vessel was recently wrecked in that harbour, containing statements of the gale in which she was lost, and of its effects on the harbour and works at Kingstown.

I am, &c.

S. R. Lushington, Esq.

(signed) *John Barrow.*

Sir, William and Mary Yacht, Kingstown, 13th March 1824.

IN reply to your letter of the 9th instant, relative to the harbour and works of Kingstown, I have to acquaint you, for the information of the Lords Commissioners of the Admiralty, that the loss of the Dwarf cutter, and indeed all the vessels that have been driven on shore this winter in the Royal Harbour, have been in north winds, from which vessels are not yet protected. Where the Dwarf lay, the extremity of the western pier bears at present about N. N. W. $\frac{1}{2}$ W. which leaves the harbour exposed from that point to N. E. by N. by compass, and when she parted from the moorings at which she was lying, the wind was about N. by E. blowing a perfect hurricane, and as the west pier is increasing at the average of 15 feet per week, the protection in the harbour next winter will be very considerable; I should think at least three points more, which will be of the greatest benefit against the heavy western gales which constantly fly round here to the N. N. W. and then again back to the W.; but it will be some time before there is protection against the north winds, which, however, are by no means frequent; but though they have only a reach of three or four miles from off Merrion Strand round to the Hill of Howth, yet the sea that rises is great; I have seen it breaking quite over the east pier, which was the case the morning that the Dwarf went against it.

It is my opinion if Mr. Rennie's plan be followed up, the harbour will, in all winds, be perfectly safe; but if Mr. Whidbey's alterations are adopted, there will be no greater safety than at present in the old pier of Dunkery, and all along the west side of the harbour, as there would be no angle to break off the heavy swell that sets direct into its mouth in an east wind.

I have not yet received Mr. Gould's report, but it shall be forwarded the moment it reaches me.

I have, &c.

J. W. Croker, Esq.

(signed) C. Malcolm.

Sir,

Kingstown, 13th March 1824.

ACCORDING to directions from Captain Malcolm of H. M. yacht William and Mary, to give a particular and minute statement of the gale on the 2d and 3d of March, and its effects on the harbour and works at Kingstown, I beg to acquaint you, for the information of the Lords Commissioners of the Admiralty, that on the evening of the 2d the weather was very squally, with showers of hail and sleet, the wind veering from N. N. E. to N. W. until the 3d at one A. M., when it veered round to W. S. W. shifting often from the southward and westward to N. W., when at 6 A. M. it settled to N. by W. and N. $\frac{1}{2}$ W.; during this time there were very heavy and sudden gusts of wind, with hail and snow, the squall getting stronger as the wind came to the northward, bringing in a very heavy sea; from 7 to 9 A. M. the time the Dwarf drove on shore, the sea was tremendously heavy, breaking continually long and short seas alternately, pitching the bows under, and dipping the stern in rising heavy; whenever the wind shifted to the N. W., the Dwarf being then sheltered one point by the western pier, the smoothness of the sea was immediately felt. I am of opinion that whenever a vessel is sheltered by the west pier, there is not the least doubt of her riding out a very heavy gale, but until the west pier is carried further out, I do not consider it a safe anchorage with the wind from the northward. I have observed since the gale, that from a cable's length inside the east pier head, the sea has made very large breaches, in some places not less than 200 feet, some, 60 or 70 feet, and others less, to the number of thirty-five, removing stones from 4 to 5 tons weight from their beds, and others near the top of the pier of 2 tons weight, the whole represented to me to have taken place during the gale of the 3d instant, which it appears was the heaviest from that quarter since the commencement of building the piers. The Dwarf has rode in this harbour with very strong gales from all points between the east and west, and never started her anchors; and when purchasing them, has had a heavy strain; I therefore think the grounds to be good holding, and that when the piers are finished it will be a safe and good harbour.

I have, &c.

(signed) Nicholas Gould,

J. W. Croker, Esq.

Lieut^t and Commander.

—(7.)—

Letter from the Right honourable Henry Goulburn to George Harrison, Esq.
With one Enclosure.

Sir,

Dublin Castle, 21 November 1823.

HAVING by the Lord Lieutenant's directions referred for the consideration of the Commissioners of Kingstown Harbour, the report of Mr. Whidbey on the state of the works at Kingstown Harbour, which you forwarded to me by your letter of the 24th ultimo, I am commanded by His Excellency to send you, for the information of the Lords Commissioners of His Majesty's Treasury, the enclosed copy of the report of the Commissioners of Kingstown Harbour thereupon, and to express His Excellency's anxiety that their Lordships should take into their serious consideration the several remarks offered by the Commissioners and their engineer, on Mr. Whidbey's report; and which in many points, especially in those which relate to diminishing the height of the western pier, and altering the kant of the pier, do appear to His Excellency to merit very deliberate attention.

I am, &c.

George Harrison, Esq.

(signed) Henry Goulburn.

Sir,

Royal Harbour of George the Fourth,
Board Room, 30 October 1823.

WE have had the honour of your letter of the 15th instant, enclosing, by command of the Lord Lieutenant, copy of a letter from George Harrison, Esq. dated the 24th past, stating that the Lords Commissioners of His Majesty's Treasury having had under their consideration a report of Mr. Whidbey on the state of the works of Kingstown Harbour, and submitting various alterations to be made therein, and desiring that we will state whether we see any objection to the adoption of these alterations, of which their Lordships, as at present advised, entirely approve, and by which so large a saving in the original estimate may be effected, &c. Mr. Whidbey's report above alluded to, as follows:

“ Sir,

“ Plymouth, 3d September 1823.

“ I and you will be pleased to inform my Lords Commissioners of His Majesty's Treasury, that in consequence of your communication to me directed, dated 1st August 1823, received on the 10th of that month from the Admiralty, I directly proceeded to Kingstown (late Dunleary) in Ireland, for the purpose of carrying into effect their Lordships commands; and I request you will be pleased to lay before their Lordships the following observations in reply to the questions put to me in your said letter, as contained in the articles 1, 2, 3, and 4.

“ Article 1st.—As to the general utility of the work, with reference to the object which it is intended to effect, and as to the degree in which the progress already made in it may justify your expectation of complete success. In reply thereto, I beg to say, in the first place, that when the Harbour of Kingstown is completed, it will be of the greatest utility and benefit to the coasting trade navigating those seas, as well as to ships of war below the higher classes that may be stationed on that coast, there being no harbour on that side of Ireland between Carlingford and Waterford where vessels can run for in gales of wind and in distress but the Harbour of Kingstown now making, nor any on the opposite coast of England and Wales, for which vessels so situated can run, excepting Holyhead and Milford. This is what I conceive to be the object of building the Harbour of Kingstown, and it ought to be finished to a certain point with all speed possible.

“ In the second place, I beg to observe, that as the greater part of the eastern pier is completed, which gives protection to vessels lying under it with easterly winds, I am certain that when the western pier is brought nearly to its completion, there will be found a most excellent and safe harbour for ships to run for to obtain shelter.

- (D.) "Article 2d.—As to the point at which the work might be stopped, if it should be desired not to complete it according to the original plan, so as to derive the utmost possible advantage from the expenditure which has already been incurred for this object. In reply generally to this article, I think the western pier of the greatest utility in making Kingstown a complete harbour; it will not only prevent sand from settling therein, but will give protection to the small coasting vessels that otherwise would not be able to ride there for want of it in gales of wind from the westward and N.W. and would in such cases be often driven on shore and lost on the eastern pier. Under these circumstances I think the western pier very essential to the making of Kingstown a good harbour; but I would not carry the head of it so near the head of the eastern pier as is drawn on the plan, but I would stop near the commencement of the last kant, making the next kant 50 feet longer, which would reduce the length of the western pier 360 feet. My reason for proposing this is, that I am of opinion that the points of entrance are too near each other, and will produce a confused sea between them in gales of wind, and endanger vessels going into and out of the harbour, if the work be finished according to the present plan, which is not likely to be the case, if the heads of the piers be placed more remote from each other; and I conceive that such an increase of opening to the entrance of the harbour would not hurt the anchorage within it by any increase of sea; I therefore think that the western pier may be considerably shortened, as well as its shape altered; for I would not only take away the outer kant, as I have before mentioned, but I would alter the direction of the next kant, extending it in a straight line, so as to place the head of the pier about 400 feet further seaward; this would then increase the anchorage in the harbour and in deep water, at the same time materially extending the entrance into it. I would also alter the head of the eastern pier; and instead of the outer kant taking the direction which it does, it should form a continuation of the next kant in a straight line, which would give more room for the anchorage than the present plan proposes, and in deep water. This alteration would cover more of the harbour from the sea, without increasing the length of the pier, consequently there would not be any additional expense, and the head will be about 470 feet further seaward, thus increasing the entrance into the harbour from 430 to 800 feet. I here beg to remark that these piers are built 13 feet above the height of spring tides; and as they are merely intended as a breakwater, I conceive that 10 feet in height may be reduced, leaving 3 feet above high water spring tides, which is quite high enough, and will give equal security to shipping in the harbour. By adopting this plan with the western pier, there will be effected a reduction of 90,740 cubic yards of stone, at 5 s. per yard, according to the prices given me, in quarrying and depositing, thus curtailing the expense 22,685 l.
- (C.)
- (A.)

"The height being thus reduced 10 feet, leaving the pier 3 feet above high water spring tides, at which height the pier measures 82 feet wide, and conceiving that 50 feet wide at that height is sufficient to give strength and stability to the pier, a reduction of 32 feet width may be made, which will produce 82,960 cubic yards, which, at 5 s. a cubic yard, will give 20,740 l., the two sums together forming a total of 43,425 l.

"The unfinished parts of the eastern pier may be reduced in the same way as I have proposed for the western pier; but as it is so far advanced towards completion, it may probably be as well to let it be finished as it is now going on, excepting the proposed alterations in its direction.

"Article 3d.—As to the probability of the work, as originally projected, being executed for the estimated expense. In reply to this article, it has been stated to me that the sum estimated will cover the expense of finishing the harbour; but as I have not seen the original estimate, I cannot give my opinion thereon.

- (D.) "Article 4th I have answered in my remarks on article 2d; and, in addition to those observations, I further beg leave to say, that I conceive nearly the whole of the estimate of 199,885 l. 17 s. 6 d., for building cut stone walls under low water and above it, may be done away, as, in my opinion, such walls will not be wanted. The building of cut stone walls under water with a diving-bell to such an extent, and in deep water, will be found extremely tedious, and, in my mind, of little if any use whatsoever.

"I here

"I here close my remarks upon Kingstown Harbour, trusting that I have fully answered all the points to which my attention has been directed, and submitting the same to their Lordships consideration.

"I have, &c.

"J. C. Herries, Esq."

"(signed) J. Whidbey."

And you signify the desire of His Excellency that we should with the least possible delay take the same into our consideration, and communicate our opinion, with such observations thereon as we shall consider necessary, for His Excellency's information.

We have now to request you will be pleased to inform His Excellency of our concern at not having been able to give an earlier reply to his commands; the magnitude of the concern, as applying to the commerce of the United Kingdom, the safety of His Majesty's vessels of war, and the lives and property of his subjects, calling for deep and intense consideration. Such, you will have the goodness to mention to the Lord Lieutenant, we have individually and collectively devoted to it; and not only with the most anxious desire to meet the wishes of the Lords of the Treasury, in point of economy, which we presume to hope will be found to have been our practice, but to retrench with all possible means of safety to the works under our care, and to the future well doing of this incomparable asylum, we approach His Excellency with our report, promising that, as ministering servants of the Public heretofore, and now to the Government, we shall ever be most cheerfully willing to give our best efforts to carry into literal execution such commands as that Government in its serious wisdom and determination shall direct.

Immediately on receiving your instructions, we called upon our resident engineer, Mr. Aird, to give us his observations upon the report of Mr. Whidbey, which he has done as follows:—viz.

"Sir,

"Kingstown, 20th October 1823.

"In pursuance of the directions of the Board of the 16th instant, in referring for my observations on Mr. Whidbey's report of 3d September last, to the Lords Commissioners of His Majesty's Treasury, on the state of the works at Kingstown Harbour, I beg leave to return the original papers, and to request you will submit the following observations to the consideration of the Board. Before proceeding to the alterations that are proposed, I would observe, that Mr. Whidbey's decided approval of the measure is a satisfactory addition to former reports on the utility of the harbour, as generally planned for this part of the Irish coast. The alterations he proposes from the present mode of proceeding are but few, being in regard to the height of the west pier, a change in the outer kant of both piers, to make a wider entrance, and doing away with the use of cut stone. These points, however, seem to me to embrace very important considerations, as relating to the great objects of the work when completed, and upon which it shall be my utmost endeavour to observe most respectfully, and with great diffidence to the opinions of Mr. Whidbey.

"And first, though not following regularly in the order of the report, as to the height of the west pier. Mr. Whidbey advised, very wisely in my humble opinion, that the east pier may be completed to the height at which it is now going on; but in pages 7, 8 and 9, it is proposed to reduce the height of the west pier to three feet above the level of a spring tide, by which means it is stated a saving will be had of 43,425*l*. On this I would beg to observe, that the section of the pier from which this calculation would appear to have been made, was taken in a part of the work that has been executed during the present summer, and which will be very considerably changed in shape by the first easterly gale of wind that occurs; it is 58 broad on the top, and experience has shown even nearer the shore, and in less depth of water, where the breadth was at first carried on much the same, that by the time the slopes come to be formed, so as to give a probable appearance of resisting the action of the waves, the top is reduced to 30 feet broad, and the same principle affords strong grounds to expect that, inasmuch as the extension of the pier carries it into deeper water, the effects of the sea will be greater also, and that the top will be reduced from 58 feet to less than 30 feet before the slopes are formed so as to stand; taking it, however, at 30 feet, and comparing the section

(A.)

then,

then, with that from which the foregoing statement is calculated, it would appear that the apparent saving, upon reducing the height and leaving the top 50 feet broad as proposed, will not exceed 19,000*l.*; but to be set against this sum, which of itself is an object, there are farther considerations that present themselves upon this view of the subject. This pier is open to the full range of E. and N. E. gales, which set in heavy and destructive seas on the south side of the Bay of Dublin, and if it is carried out at a height of only 3 feet above high water, a strong paving will be necessary all over the top to preserve it at that height against the force of seas, of four or five feet high, that will break over it in every easterly storm. The expense of this paving, which will require to be of heavy blocks of stone, will be considerable; and if the work is overtaken by one of these storms, with the paving not executed to the very entrance point, considerable loss will be sustained, by quantities of the rubble-stone being displaced, and driven out of the line of the pier. With the pier only 3 feet above high water, the progress of the work will be considerably impeded; it would seem very doubtful whether it would be at all advisable to proceed with it in the winter and first months of the spring, when easterly gales prevail the most, for every one of them will have the effect of displacing the whole of the railways, while the intervals between will hardly be sufficient in many instances for having them relaid, and, with great deference, the imperfect shelter that a pier of that height could give to a great proportion of the vessels that frequent the Bay of Dublin, is not the least part of this view of the subject that merits consideration.

- (B.) " Secondly,—The proposed alteration of the entrance, is a part of the subject which I feel still greater diffidence to enter upon, for I look upon its arrangement and construction to form a very essential part of a harbour, and particularly the one under consideration, which is for giving safe admittance and sufficient shelter within to all classes of vessels, from the well found ship of war down through to the smallest and worst equipped of ordinary traders; having in view at the same time, the effects of the heaviest seas, the set of the currents, and the quantity of sands that abound in the vicinity round the inner shores of the Bay. I have the satisfaction to know that all these points met the full approbation of the late Mr. Rennie's great mind, in arranging and finally forming the present plan; and I believe it is on record in the proceeding of the Board, under the high authority of the Secretary to the Lords of the Admiralty, his opinions remained unshaken respecting it to the latest day of his life. By it the pier heads are about 430 feet apart, and disperse the seas from the most stormy points, and prevent as far as practicable the swells from entering within. In regard to these what I may call important considerations, the proposed alterations of the pier heads, if carried into execution, will have a very materially different effect, as to the quietness in the inside of the harbour, if, instead of the outer kants inclining as at present laid down, they be made straight in the direction proposed, and so as, with the alteration on the west side, to form an entrance of 800 feet wide, scarcely any interruption will be presented to prevent the E. and N. E. seas, which are the heaviest of any on this shore, from ranging in their full force along the whole line of the west pier; and under such circumstances, any vessel that may be unable to fetch in under the east pier, will reap little or no advantage whatever from entering the harbour by the proposed alteration of the entrance; all the seas from a northerly direction will in like manner be felt much more along the inside of the east pier, than they would be by the entrance according to the present plan.

" Such subjects may be said, and perhaps very properly, to belong more to considerations of a nautical character; and feeling so, I shall only venture on one other observation upon this view of the case: if the pier heads are not to be of cut stone, built from the bottom, but formed of rubble work, their ends will necessarily require to have a considerable slope, in order to prevent the stones from being scattered all over the entrance, and in this way an apparent width of 800 feet may not give more effectual room than one of 500 feet, when regularly built from the bottom; besides, while the former will admit a greater quantity of sea to pass in, there is still another serious disadvantage to be dreaded, namely, that of strangers not being aware of the full shape of the entrance, or others from darkness, or other causes, not borrowing sufficiently for the rake of the slope, so as to prevent them from falling on it in the trough of a sea, and meeting destruction in that way at the critical moment of expectation to reach a place of safety. With pier heads
regularly

regularly built from the bottom, a vessel has only to steer clear of what appears above water, in order to get safe into her asylum.

"Reference is had towards the conclusion of the report to an estimate of 100,885 *l.* 17 *s.* 6 *d.* for building cut stone walls, and an opinion given that they will be of little if of any use. I am inclined to think that this estimate has reference to the pier first projected, and proposed to be wholly faced with cut stone, rather than to the present plan; for the proposition for the present plan extends only to executing the two outer kants and the pier heads with that kind of work, and for which considerably less than half the above sum will be sufficient.

(D.)

"From what has been stated respecting cut stone and the formation of the pier heads, and lowering the west pier, I trust the whole of the subject is sufficiently prepared for the Board to enter upon its due consideration, without any further observations of mine; the building of walls in deep water by diving bells is necessarily, as has been stated, rather a tedious operation, but it is a certain mode of doing the work, and its now general use a very great important improvement to the former practice of executing harbour works in deep water.

"I am, &c.

"George Darling, Esq."

(signed) "John Aird."

It is most satisfactory to us, and will be to the public at large, that the usefulness of the work, in all its bearings, has been approved of and lauded by a gentleman of Mr. Whidby's professional character; it will satisfy the public mind, that though the expenditure has been considerable, and will call for possibly still greater contributions, that it has and will be for the general and incalculable future benefit of the United Kingdom; that it is no longer a speculation in probability, but an ascertained fact that, whatever sums Government in its wisdom shall think proper to devote to the work, will be most amply remunerated in the asylum prepared for the safety of the shipping of the nation, whether employed in commerce, or the proceedings of war.

But to the immediate subject: in doing which, we shall follow the order of Mr. Aird's observations. Mr. Whidby (page 22 herein, marked A.) recommends that the western pier, which at present is carried out above the height of 13 feet above high water spring tides, shall be reduced to three feet, thereby occasioning a saving of 43,425 *l.* In Mr. Aird's remarks on this head, (herein, page 23, marked A.) he enters very minutely into the subject; and although we are perfectly satisfied that the height proposed would fully answer the purpose of shelter to the harbour from west and north-western winds, its original contemplated purpose, yet knowing as we do, that in its progress out it will be exposed to the fury of north-east storms, which blow fearfully on this coast at times, and apprehensive that Mr. Aird's remarks of the probability of the work on that side being thereby suspended in the winter months, is grounded on good sense, as even at its present elevation the sea has been thrown over it, and the work for a period stopped, and much time lost and expense incurred, and uncertain of the heavy expenditure for massive pavement as a substitute, we beg to offer to the consideration of His Excellency and their Lordships of the Treasury, the expediency of our continuing the western pier at its present elevation for this winter; thereby affording more shelter from the eastern pier, and giving us the opportunity of the season for remarking, with a critical eye, upon the propriety or practicability of adopting Mr. Whidby's suggestions. If this our recommendation shall be sanctioned, we shall ourselves attend to the operations of the storm, and in April next report thereon to His Excellency in special form.

Following the order of our engineer's observations, we come to Mr. Whidby's recommendation of alteration as to the entrance of the harbour, (page 22 herein, marked B.) and observed upon by our engineer (also marked B). On this point we possibly should ground ourselves upon Mr. Whidby's nautical experience; but the remarks of our resident engineer are so pointedly strong, and those remarks supported by one of our members, a gentleman of great nautical experience, we are fearful that should Mr. Whidby's plan of taking out the west pier without the inward kant, be carried into effect, that it would most seriously injure the western anchorage of the harbour, and also the old harbour, which would then be as bad

as it is at present in easterly winds. The mouth of the harbour opens to E. N. E. from which the heaviest seas come, and for which, if Mr. Whidby's plan is followed, the western pier, instead of being a break, would be a conductor the whole of its length into the old harbour, which is and must remain the discharging place of the local trade of Kingstown, and the only place a vessel could run for, who may part her cable in the harbour, or come into it for safety, without materials, having within it the only sandy beach in the harbour; but should His Excellency and the Lords of the Treasury think proper to adopt Mr. Whidby's proposal, and should circumstances arise in the progress of the western pier (which will take a few years to carry to its intended termination), to show the necessity of a return knut, to check the power of the east and north-east seas, as feared by Mr. Aird, that barrier or jetty can at any time be made.

The next recommendation of Mr. Whidby upon which we have to reply, is the extension of the entrance of the harbour from 450 to 800 feet (page 22 herein, marked C.) and observed thereon by our engineer (herein also marked C). We avow, not having sufficient practical knowledge to justify us in giving an opinion farther, than if, at any future time, necessity shall show itself of erecting upright terminations to the piers, the space of 800 feet appointed by Mr. Whidby will leave room for such erection, without narrowing the entrance to a less space than originally laid down by the late Mr. Reunie.

Upon Mr. Whidby's proposal, (page 22 herein, marked D.) as to cut stone facings, with Mr. Aird's observations (also marked D.) we have only to reply as in the preceding; but we strongly recommend that we be permitted to continue to reserve, and from such blocks as may be met with in the progress of our works in the quarries; because, should it hereafter be found necessary to face the ends of the piers, our present supply of stone for that purpose is not equal to more than one-twelfth part of the quantity which will be required, and the expense of a hurried supply would be enormous; because, should they not be required for the piers, they will be ready at the water's edge, and at a comparatively small expense, prepared for any other great public work either in England or Ireland; for example, constructing jetties in the Royal Harbour, if ever it shall be made a naval station, and for the assembling of convoys and transports, for which it will be found most fitting, both in point of central situation, security and extent; and because that, with every attention on our parts to secure what has heretofore offered, the cost has been but 500 *l.* per annum on an average. 1,400 blocks average, 8 feet long and 33 cubic feet (average each) 46,200 feet, at 1 s. 4 d. per cubic foot, for shaping, cutting and drawing, 3,080 *l.*

We beg you will assure His Excellency and the Lords of the Treasury, that, with this report, we submit ourselves entirely to the determinations that may be made upon it, and that our zealous endeavours shall be exerted to carry such into effect, with every possible attention to economy in the expenditure of the funds which Government shall think proper to entrust to our management.

We have, &c.

(signed) *Richard Verschoyle.*
James Crofton.
Graves Chamney Swan.
Francis Hodgkinson.
Ab^r Bradley King.
Charles Malcolm.

Right honourable Henry Goulburn.

—(S.)—

Letter from the Right honourable Henry Goulburn to George Harrison, Esq.—
 With two Enclosures.

Sir,

Dublin Castle, 17th January 1824.

HAVING by the Lord Lieutenant's directions called upon the Commissioners of the Royal Harbour at Kingstown to furnish the estimates of the sum that will be necessary for carrying on the works at Kingstown, for the year 1824; I am
 commanded

commanded by His Excellency to transmit herewith the enclosed copy of a representation from the Commissioners in reply, forwarding a report of Mr. Aird their engineer, their estimate, and statements required; at the same time detailing the accidents to shipping which have occurred within the harbour during the past year; and I am to signify His Excellency's desire that you will submit the same to the Lords Commissioners of His Majesty's Treasury for their Lordships consideration and decision.

I am, &c.

(signed) *Henry Goulburn.*

George Harrison, Esq.

Sir,

Royal Harbour of George the Fourth,
Board Room, 8th January 1824.

WE have to acknowledge the receipt of your letter of 28th November last, as follows; viz. "I am commanded by the Lord Lieutenant to communicate to you His Excellency's desire that you will, with the least possible delay, furnish me with an estimate of the sum that will be necessary for the support of the works at the Royal Harbour at Kingstown, for the year 1824; setting forth the cause of increase or decrease, if any, in a distinct statement, together with a petition to be presented to the House of Commons. It is His Excellency's particular desire that the estimate may be kept as low as the description of service will permit. You will also transmit as early as possible, after the close of the present year, an account of the expenditure of the Commissioners, for the year ending the 5th January next; and His Excellency desires me to impress the necessity of furnishing all these documents in triplicate."

In compliance therewith, we have the honour to enclose a probable estimate of the expense of the works at the Royal Harbour of George the Fourth, for one year, from 5th April 1824, amount 41,000 *l.* In giving the grounds for this calculation to our engineer, we have confined ourselves to the least possible expenditure, as being the amount of the quantity of stone which can be passed in the course of the year from Dalkey quarries through one range of inclined planes; the second and parallel range of inclined planes will with this estimate remain unworked for the season, except during temporary repairs of the working range. The estimate is for 160,000 cubic yards of stone, being about the quantity received from Dalkey Hill in the last year, in the course of which we cut out a quarry called the Clauris, which will cause a reduction in our expenditure of 4,000 *l.*, being the difference less between the estimate for 1823 and 1824.

We enclose also a copy of our resident engineer's annual report; and we have great satisfaction in corroborating his report in every particular. No material accident to the works has taken place in the course of the year, notwithstanding the frequent and unprecedented violent storms which have occurred during that period.

We also enclose a statement showing the cause of increase or decrease, and all the documents in triplicate. We feel it our duty to state to you, for the information of the Lord Lieutenant, that a few trifling accidents to shipping did occur within the harbour. On the 5th November, a brig, the "*Friends*," burthen about 200 tons, in ballast, outward bound, dragged her anchor and ran stern foremost on the rocks to the south of the harbour; this we ascertained to be entirely owing to carelessness of the person (the mate) in charge, as he did not let go a second anchor till touching the rocks; she has however been got off and taken up to Dublin.

On the memorable and tremendous storm, or rather hurricane, of the 3d December, in which it was wonderful that so few vessels were injured, four accidents occurred. When the hurricane veered round to the north-west, and the vessels in the harbour were outside the protection of the western pier, a Dutch schooner, the "*Calericus*," burthen 110 tons, parted her cable, and was forced on the eastern pier and became a wreck; one sloop, the "*Providence*," of Fingard, of the burthen of 70 tons, broke her anchor, and was of course driven on the eastern pier, not having space to bring up with a second anchor, as only 38 fathom of cable was given out in 7 fathom water; another sloop, the "*Aurora*," of Carrarvon, of the burthen of 60 tons, dragged her anchor, and from the same cause as above, not having room to bring up with a second anchor, was forced on the pier; but both will in all probability

be got off with little damage. These vessels were all in ballast outward-bound, had come into harbour on that day to wait for the tide to proceed on their destinations; being light, the whole of their hulls were exposed to the power of the storm; no precaution had been taken to lower topmasts or yards, and the probability is, that the single anchor at which they were swinging, was one calculated only for a temporary stay. With these impressions we must believe, that want of proper precaution on the part of the mariners, occasioned the disasters of these vessels; in proof of which we have to state for His Excellency's information, that sixteen other vessels, large and small, then at anchor in the harbour, held fast during the whole of the storm, which, with the parting of the cables and the breaking of the anchor in the cases before stated, places beyond a doubt the fast holding of the anchorage of the harbour, when proper anchors and cables are made use of. The fourth and last accident to be recorded of that day, was the sinking of a heavy laden stone hucker at her anchor, which was occasioned by her hatches being uncovered; she was therefore instantly filled by the sea breaking over her, and went down; she, however, will be raised without damage. We regret having to state these circumstances, but we rejoice in having it in our power to add that no life was lost; not even did personal injury occur to any of the crews.

We feel, notwithstanding these trifling calamities, that we are justified in advancing, that when finished, no harbour in the world will be more secure or more useful, comparatively exposed as it is from the north-west: and without any invidious intention, we beg leave to recall to His Excellency's recollection, the melancholy retrospect of the number of vessels and lives lost on the coasts of Great Britain, east and west, even in the close harbour of Holyhead, and on canals. That the Royal Harbour of George the Fourth should totally escape misfortune could not be expected, open as it at present is to a most stormy point, the north-west: the advance of the western pier will, however, every day lessen that evil; and when the breakwater shall be completed, we have no fears of any accident thereafter occurring within the harbour.

We have only to add, that the estimate having been presented to the House of Commons last year, by command, we refrain from preparing a petition without your further orders.

We have, &c.

(signed)

*Richard Verschoyle.
James Crofton.
Francis Hodgkinson.
Alfred Bradley King.
Charles Malcolm.*

Right Hon. G. Goulburn.

Sir,

Royal Harbour, Kingstown, 6th January 1824.

I HAVE to acknowledge the receipt of the copy of a letter from the Right honourable Henry Goulburn, of the 25th November, communicating the desire of His Excellency the Lord Lieutenant, that the Commissioners of the Royal Harbour of Kingstown should furnish him with an estimate of the sum that will be necessary for carrying on the works for the year 1824, and the desire of the Commissioners of the 4th ultimo, that I should submit an estimate accordingly, on their general mode or system of work.

In compliance therewith, and before proceeding to the consideration of the estimate, I beg leave to offer a concise statement of the extent to which the works have arrived; and, first, I may observe, that they continue to be carried on in strict conformity to the description and plan as laid down for them by the late Mr. Rennie.

During the twelve months from the 5th January 1823 to 5th January 1824, the east pier has been extended 312 feet, in a depth from 28 to 30 feet under low water mark, which comprises about 518 of the second kant, and makes the whole length of that pier about 3,662 feet from the line of high water on the shore; and during the same period, 528 feet of length has been added to the west pier, in a depth of 12 to 15 feet under low water mark, making the whole extent of this pier from the old harbour to its present extremity to be about 3,383 feet.

It will be observed, that the extension of the piers during the period under consideration is less than in the preceding similar period; to which I beg to offer, in explanation,

explanation, that the severity of easterly storms during last winter and spring made considerable impression on several parts of the easterly side of both piers; and to replace these encroachments, and give the requisite security to other places made evident by the action of the sea not to be of sufficient strength, necessarily consumed part of the stones quarried; and the circumstance of the west pier being in deeper water than formerly, also required an additional consumption of materials in proportion.

According to the plan laid down by the late Mr. Rennie, the east pier will yet require about 688 feet of length, and the west pier about 3,432 feet, to bring them to their termination. In my statement of 10th February last, of the length required to complete the west pier, a clerical error had some way or other crept in, as, instead of 3,060, it should have been 3,960; the error is, however, corrected in the length above stated, and I hope it has not been productive of any ill effects.

In the estimate of last year, it was contemplated to proceed with a facing so as to secure the outside glacis of the east pier; but the proposals offered for that work appearing too high, and not being of a pressing nature, it has not yet been put in execution. A span, however, of about 550 feet in length, on the back of the west pier, appearing to require more immediate attention, and as being executed at a more reasonable rate, is on the eve of completion.

The principal efforts of the year's work have been directed to the extension of the rubble mole which forms the present state of the piers, and the preparation of cut stone for their extreme ends, according to the original intention. In addition to these, and as arising out of the circumstances of the harbour, a beginning has been made in the formation of a reservoir for supplying the shipping with water, the expense of which will be considerably lessened by its being on ground the property of the Commissioners, and that the excavation being of rock which goes to the formation of the piers; as also to a small landing-place, which was much called for, from the inconvenience hitherto experienced in landing from packets or other vessels in the harbour.

It may be observed generally, that in the progress of these works no material accident nor unforeseen occurrence has taken place, and that the quarries continue to promise an abundant supply of suitable materials.

As heretofore, I apprehend the principal works of the present year will be directed by the Commissioners to a continuation of the rubble work of the piers, the importance of the earliest practical completion of which is rendered daily more and more apparent. In considering of the progress to be made in this part of the work, it may be observed, now that the quarries of Carlfield and Glastool are worked out, that the whole supply of rubble stone must come from Dalky Hill, and that the quantity is limited to that which can be passed through one set of inclined planes. According to the experience that has been had of this, the annexed probable estimate is humbly submitted, including the works of the reservoir and landing-place, which are of the same description. Should, however, the importance of earlier completion be deemed worthy of consideration, a full third more may be executed with equal facility, by putting the other set of inclined planes in motion.

I am, &c.

(signed) John Aird.

Geo. Darling, Esq.
&c. &c. &c. Dublin.

— (9.) —

Copy of Treasury Minute, dated 9th July 1824.

READ letter from Mr. Goullurn, dated 21st November 1823, transmitting copy of a report from the Commissioners of Kingstown Harbour, on Mr. Whidby's report upon the state of the works there.

Read also letters from the Secretary to the Admiralty, dated respectively, 12th September and 6th October 1823, and 18th March 1824, transmitting copies of reports from several naval officers, relative to Kingstown Harbour.

363.

H

Read

24,477.
21,123.
54,418.

1,115. Read also letter from Mr. Goulburn, dated 17th January last, transmitting a representation from the Commissioners of Kingstown Harbour, enclosing a statement of the expenditure for the year 1823, and an estimate of the sums required for carrying on the works there for the year 1824, together with a report from their engineer on the subject, and detailing the accidents to shipping which occurred within the harbour during the past year.

677. Read also a letter from the Commissioners for the said Harbour, dated 8th January last, on the same subject, which is a copy of the representation from them contained in the above-mentioned letter from Mr. Goulburn.

My Lords read again the report of Mr. Whidby upon the state of the works at this harbour, and also the vote of the House of Commons for granting the sum of 41,000 *l.* towards the expenses of carrying them on for the year 1824.

My Lords having had this subject under their most anxious consideration, with reference to the conflicting opinions given by nautical and scientific persons respecting the different plans upon which it has been proposed to complete this harbour, so as to afford the greatest possible degree of convenience and security to the shipping resorting to it; and feeling much difficulty in coming to any decision upon a view of these various professional and technical opinions, the respective merits of which the Lords of the Admiralty are more peculiarly qualified to estimate, they think it highly desirable that the whole subject should be considered by that Board, and that the work should go on under their general direction. They will therefore request the Lords of the Admiralty to undertake the superintendence of it, and to instruct the Commissioners in the course which they are to pursue, adhering as much as possible to the reductions in point of expense, which are suggested by Mr. Whidby in his report, provided it shall appear to the Lord Lieutenant of Ireland that there is no objection to this arrangement.

Write to Mr. Goulburn for the information of the Lord Lieutenant of Ireland, in the terms of this minute, and desire that he will move His Excellency to give the necessary instructions to the Commissioners of the Harbour, if he shall concur in opinion with their Lordships upon this subject.

— (10.) —

Letter from the Right honourable Henry Goulburn to J. C. Herries, Esq.

Sir,

Dublin Castle, 19th July 1824.

I HAVE to acknowledge the receipt of your letter of the 10th instant, stating that the Lords Commissioners of His Majesty's Treasury feeling much difficulty in coming to any decision upon the various professional and technical opinions relative to the proposed completion of the Royal Harbour of George the Fourth at Kingstown, so as to afford the utmost possible degree of convenience to the shipping resorting to it, are of opinion that the subject should be considered by the Lords of the Admiralty, as more peculiarly qualified to estimate the merits of the proposed plans, and that the works should go on under their directions.

And having laid your letter before the Lord Lieutenant, I am to acquaint you for the information of the Lords of the Treasury, that the Act which appointed Commissioners for the Harbour of Dunleary, or Kingstown, appears to oppose obstacles to transferring the management or conduct of the work from the local Commissioners to the Lords of the Admiralty. There can be no objection, however, to their Lordships taking the opinion of the Lords of the Admiralty on every point connected with this work, and if in consequence of that opinion, any change of plan or system should be deemed advisable, the orders for such change might be conveyed by the Lord Lieutenant to the local Commissioners appointed under the Act.

I am, Sir,

Your most obedient, humble servant,

(signed) Henry Goulburn.

J. C. Herries, Esq.

— (11.) —

Copy of Treasury Minute, dated 31st August 1824.

READ letter from Mr. Goulburn, dated 19th ultimo, stating in answer to the letter of this Board of 10th ultimo, signifying their Lordships opinion that the subject of the proposed completion of the Royal Harbour of George the Fourth at Kingstown, should be left for the consideration and decision of the Lords of the Admiralty, that the Lord Lieutenant of Ireland is of opinion that the Act which appointed Commissioners for the Harbour of Dunleary, or Kingstown, appears to oppose obstacles to transferring the management or conduct of the work from the local Commissioners to the Lords of the Admiralty; that there can be no objection, however, to my Lords taking the opinion of the Lords of the Admiralty on every point connected with the work, and if in consequence of that opinion any change of plan or system should be deemed advisable, the order for such change might be conveyed by the Lord Lieutenant to the local Commissioners appointed under the Act. 15,647.

My Lords read again their minute of 9th July last, upon this subject.

Transmit all the papers to the Secretary of the Admiralty for the information of that Board, and desire he will acquaint their Lordships that my Lords having had this subject under their most anxious consideration, with reference to the conflicting opinions given by nautical and scientific persons respecting the different plans upon which it has been proposed to complete the works of the harbour, so as to afford the utmost possible degree of convenience and security to the shipping resorting to it; and feeling much difficulty in coming to any decision upon a view of these various professional and technical opinions, the respective merits of which the Lords of the Admiralty are more peculiarly qualified to estimate, they think it highly desirable that the whole subject should be considered by that Board, having reference more particularly to the suggestions contained in Mr. Whidby's report for reducing the expense of the work. Desire that he will at the same time acquaint the Lords of the Admiralty, that when they have had the subject under their consideration, my Lords request to be favoured with their opinion upon it, when my Lords will take the necessary measures for directing the Commissioners of the Harbour to continue the works in the manner and upon the plan which may appear to the Lords of the Admiralty best calculated for combining the two objects of economy and public utility in the completion of this work.

— (12.) —

Letter from John Barrow, Esq. to J. C. Herries, Esq.

Sir,

Admiralty Office, 15th October 1824.

HAVING laid before my Lords Commissioners of the Admiralty your letter of the 7th of last month, submitting, by direction of the Lords of His Majesty's Treasury, the several papers therein referred to on the subject of the proposed completion of the Royal Harbour of Dunleary; I have received their Lordships commands to acquaint you that, in pursuance of the wish of the Lords of the Treasury, signified in your said letter, they have fully considered the whole of the said papers, from which they are of opinion that the following facts are incontrovertibly made out:

1st.—That a safe harbour in the Bay of Dublin, in which vessels may find shelter at all times of tide, is essentially necessary:

2dly.—That the shelter is required as well from the N. and N. W. as from the E. and S.:

3dly.—That the form of the harbour as settled by the late Mr. Rennie is therefore the most likely to give the complete security so required, when vessels are actually within the piers.

On the three foregoing points, the numerous opinions given in the several papers transmitted, *sufficiently concur*; but the majority of the practical naval officers, (amongst whom Mr. Whidbey is reckoned), consider the entrance left by Mr. Rennie's plan, between the pier heads, is too narrow for vessels of large dimensions to run for it in a *gale of wind* by night, or indeed even by day if with a scant wind.

My Lords therefore think if an entrance of a cable's length, or 600 feet, could be afforded, it would very materially improve the probable general utility of the harbour to the larger class of vessels which navigate the Irish Channel; but if this cannot be granted without letting in such a sea as to endanger the smaller vessels in the harbour, lying along the western pier, as supposed by Mr. Aird, there can, in their Lordship's opinion, remain no doubt of the propriety of finishing it entirely according to the form proposed by Mr. Rennie, which will evidently give the completest shelter. My Lords do not, however, consider, that in the present unadvanced state of the western pier, a sufficiently correct judgment can be framed of the necessity of carrying it the *whole extent* contemplated by Mr. Rennie, and are therefore inclined to recommend that the form directed by Mr. Rennie should be strictly followed to the completion of the eastern pier, and also on the western pier to the angle of the last kant; and that its further progress be then stopped until it be seen whether the opening then left shall admit sufficient sea as to cause such degree of inconvenience as to counterbalance the advantage of having about 650 feet of entrance instead of 430; in which case there will be no difficulty in then completing the last kant as designed by Mr. Rennie, and thereby narrowing the entrance in conformity to his plan. At present it appears to my Lords, that without this last kant of the W. pier, only a small portion of the harbour will be exposed to northerly winds, and that the heads of the two piers will afford protection against the east winds; and they are decidedly averse to Mr. Whidbey's proposal of altering the shape of the piers and of shortening the western one by two kants, which would, in their opinion, hazard much the efficacy of this important undertaking; but they think the height of the western pier might be diminished as Mr. Whidbey proposes, though of course persons on the spot will be the best judges how much the inconvenience feared by Mr. Aird will admit of its being lowered; and finally, my Lords are clearly of opinion, that the *ends* of the piers (at least), should be faced with cut stone, on account of the entrance being necessarily so narrow.

I am, &c.

J. C. Herries, Esq.

(signed.) John Barrow.

— (13.) —

Copy of Treasury Minute, dated 22d February 1825.

19,549.

READ letter from the Secretary to the Admiralty, dated 15th October 1824, on the subject of the proposed completion of the Royal Harbour of Dunleary, wherein he states, by direction of the Lords of the Admiralty, that it is the opinion of many practical naval officers, that the entrance left by Mr. Rennie's plan between the pier heads is too narrow, and that their Lordships think that if an entrance of a cable's length, or 600 feet, could be afforded, it would very materially improve the probable general utility of the harbour to the larger class of vessels which navigate the Irish Channel; but if this cannot be granted without letting in such a sea as to endanger the smaller vessels in the harbour, laying along the western pier, there can remain no doubt of the propriety of finishing it entirely according to the form proposed by Mr. Rennie, which will evidently give the completest shelter. He also states, that they are of opinion that the form directed by Mr. Rennie should be strictly followed to the completion of the eastern pier, and also on the western pier to the angle of the last kant, and that its further progress be then stopped until it be seen whether the opening then left shall admit sufficient sea as to cause such degree of inconvenience as to counterbalance the advantage of having about 650 feet of entrance instead of 430; in which case there will be no difficulty in their completing the last kant as designed by Mr. Rennie, and thereby narrowing the entrance

entrance in conformity to his plan; but they think the height of the western pier might be diminished, and that the ends of the piers should be faced with cut stone, on account of the entrance being necessarily too narrow.

My Lords resume the consideration of Mr. Goulburn's letter of the 19th July 1824, and of all the previous papers upon this subject.

Transmit copy of the letter from the Admiralty to Mr. Goulburn for the information of the Lord Lieutenant of Ireland, acquainting him that my Lords entirely concur in the opinion expressed by the Lords of the Admiralty upon this subject, and desiring he will move His Excellency the Lord Lieutenant to issue such instructions as may be necessary to the Commissioners of the Harbour, for the completion of this work in the manner recommended by the Admiralty Board. My Lords at the same time request that the Commissioners may be directed to make a report for their Lordships information of the present state of the works carrying on under their superintendence, together with an account of the expenditure up to the 5th January 1825, and an estimate of the sum which will be required to defray the charges to be incurred in the present year, towards which my Lords have proposed to submit a vote to Parliament for 45,000 *l*.

— (14.) —

Letter from James Crofton, Esq. to S. R. Lushington, Esq.; proposing Alterations in Mr. Rennie's Plan of Dunleary Harbour, and giving two slight Drawings thereof.

Sir,

Nerot's Hotel, 21st March 1825.

I HAD the honour of receiving your letter of the 19th instant, enclosing, by command of the Lords Commissioners of the Treasury, copy of a letter from the Board of Admiralty of the 15th October 1824, on the subject of the finish of the Royal Harbour of George the Fourth, at Kingstown; and copy of a letter dated 26th February past, from the Lords of the Treasury to the Government of Ireland, approving of the Admiralty opinions, and requesting that His Excellency the Lord Lieutenant will issue the necessary instructions for carrying the same into effect; and you desire that, as a Commissioner of the Harbour, now happening to be in London, I shall communicate my opinion to their Lordships of the Treasury on the matters alluded to in the before-mentioned letters.

In those letters it is directed that the plan laid down by the late Mr. Rennie be continued to the completion of the eastern pier, and nearly to the termination of the western one. Previous to my offering an opinion thereon, I must take leave to say, that I believe at the time these plans were drawn, the great mind of that great and unrivalled engineer had been intensely and unremittingly devoted to provide for all the necessary objects connected with the harbour, so far as human foresight could at that time accomplish. I had many meetings with him; I know all his then theory, and I will freely admit I entirely agreed with him as to his then plan, subject to any alteration which experience might prove to be necessary for the material usefulness of the work.

I must here premise, that the work was, in the first instance, of a local nature, undertaken by the citizens of Dublin, upon the reliance of the produce of certain port duties which were sanctioned by Parliament. The utmost extent of the pier then contemplated was 2,950 feet, at an estimated expense of about 50,000 *l*. After the work had considerably advanced in the first straight line, application was made to the Government of Ireland for an extension of that line of 1,000 feet; this was acceded to, I presume, from a conviction that the work well merited every countenance of the Government. The consequence of the extension of the first line induced Mr. Rennie to extend the piers to 800 feet each, instead of 500, so that the pier which was originally intended to be 2,950 feet, was extended to 4,500.

I beg allowance for any trifling error I may commit in the number of feet; I have no official documents with me; I give them in the most part from memory, corrected from a very miniature plan in my pocket book; but I believe if there be any difference,

ference, it will be found between the lines of high and low watermark, from the commencement of the pier alluded to. In this general extension the same bearings of the original were observed in all its parts.

Shortly after, the shipping and mercantile interest again applied to Government for the erection of a western pier; such erection was sanctioned with the favourable opinion of the Commissioners, and the late Mr. Rennie was recommended by the Government of Ireland to Parliament, and a law consequently passed; the present plan, with all the accompanying documents, having been previously submitted to the Legislature. So far as the rise and progress of this great and unparalleled concern, this latter addition being a breakwater of upwards of 4,400 feet in length, with consequent railways, machinery, and embankment, attended with a considerable expense, and estimated at 295,000 £.

I am now brought to the point of opinion demanded by their Lordships, and knowing as I do, that the opinion of Mr. Aird, our resident engineer, and the majority of our Board, are for completion according to Mr. Rennie's plan, I feel rather awkward in putting on record a total disagreement of opinion in that particular. I have come to London for the sole purpose of endeavouring to obtain an extension of power to our Commissioners, to enable us to make regulations, with legal authority to enforce them, for the proper order of the harbour, and the convenience and the safety of person and property of those resorting to it, including the disembarking and embarking of from four to six hundred passengers daily in the summer months, in the steam vessel to and from Liverpool, Bristol, &c., who heretofore have had but little protection to their persons or property from the want of such regulations. And in a conversation with which I was honoured by the Right honourable the Chancellor of the Exchequer, I submitted to him a general view of those points, which I shall now endeavour to explain to you for their Lordships information.

Should the present plan be persevered in, the consequence will be that the mouth of the harbour will be open to two points to the northward, and two points to the south of east, for the whole reach of the Irish Channel; and if enlarged to 600 feet, to a further exposure northward; and although the harbour, according to that plan, would afford good shelter for His Majesty's ships and those in the merchant service, *very well found with good ground anchorage*, yet experience has evinced that the common class of merchant vessels and coasters are not in general sufficiently found to stand against a sea reach of only five miles from the N. and N.W., and I am fearful that the consequence would be, that after its completion in its present form, incessant applications would be made to Government for further protection, by throwing a breakwater across the mouth of the harbour to hull the seas I have before alluded to; and should necessarily compel a measure of that nature, the expense would be enormous; I cannot estimate it at less than 300,000 £, and doubt much, considering the depth of the water, from five to six fathoms at the low water spring tides, that that sum would accomplish it; and the entrance into the harbour would in many instances be impeded, and a dangerous and I fear *fatal* rock placed nearly in the centre of the Bay of Dublin.

In order to avoid either or both of those evils, I would recommend a total alteration in the terminating line or kant of the eastern pier; and to enable their Lordships eye to follow my proposal, I annex at top a sketch of the harbour on the present plan, and a sketch of that which I would substitute, and which, though minute, are sufficiently distinct and accurate for the purpose intended.

N^o 1. shows the harbour as planned by Mr. Rennie, in which their Lordships will observe the dotted line from the battery at the land side of the harbour to the Nose of Howth, from which point bearing E. N. E. from the mouth of the harbour to the point S. S. E. or thereabout, the harbour is landlocked; though to northward the sea reach is in part from 5 to 6 miles. To the eastward of that dotted line, their Lordships will perceive the overwhelming torrent which will be forced into the harbour from E. N. E. to E. S. E., raking down even into the old inner local harbour; and I have marked the position of the breakwater which I fear must be the finish of the work, if it shall be finally determined to pursue the present plan.

N^o 2. shows the plan I propose for obviating those evils: the last line or kant would run in a direction something about N. W. by N. to the distance of about 1,300 feet, until it crossed the dotted line of shelter marked from the Nose of Howth,

See Plate.

Black Light S.I.E. distance 100 yds

N° 1

Black Light S.I.E. distance 100 yds

N° 2



